

Under the Paperwork Reduction Action of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for Form 1449A/PTO		<b>Complete if Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (Use as many sheets as necessary.)		Application Number	10/612,542
		Filing Date	July 1, 2003
		First Named Inventor	Yen-Kuang Chen
		Art Unit	293
		Examiner Name	Malzahn, David H
		Attorney Docket Number	42P1576
Sheet		of	

## U.S. PATENT DOCUMENTS

Exam. Initials	Cite No. <sup>1</sup>	Document Number Number-Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	AA	US-6,816,961	11/9/2004	Rice et al.	
	AB	US-2003/0131030	7/10/2003	Sebot et al.	
	AC	US-6,745,319	6/1/2004	Balmer et al.	
	AD	US-2005/0188182	8/25/2005	Hoyle et al.	
	AE	US-2002/0002666	1/3/2002	Dulong et al.	
	AF	US-2003/0123748	7/3/2003	Sebot et al.	
	AG	US-2001/0016902	8/23/2001	Abdallah et al.	
	AH	US-6,211,892	4/3/2001	Huff et al.	
	AI	US-6,115,812	9/5/2000	Abdallah et al.	
	AJ	US-2003/0231711	12/18/2003	Zhang et al.	
	AK	US-2002/0172287	1/21/2002	King	
	AL	US-2002/0159529	10/31/2002	Wang et al.	
	AM	US-6,430,684	8/6/02	Bosshart	
	AN	US-2004/0098556	5/20/04	Buxton et al.	
	AO	US-2004/0098567	5/20/04	Hansen et al.	
	AP	US-2004/0205323	10/14/04	Hansen et al.	
	AQ	US-2005/0100312	5/19/05	Chen et al.	
	AR	US-			
	AS	US-			
	AT	US-			

## FOREIGN PATENT DOCUMENTS

Exam. Initials	Cite No. <sup>1</sup>	Foreign Patent Document Country Code <sup>3</sup> -Number <sup>4</sup> -Kind Code <sup>5</sup>	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
	AU	EP 0130 380	01/09/1985	IBM		
	AV	EP 0363 176	04/11/1990	IBM		
	AW	WO 03/038601	05/02/03	Intel Corporation		
	AX					
	AY					
	AZ					
	BA					
	BB					
	BC					
	BD					
	BE					

Examiner Signature	Date Considered
--------------------	-----------------

\*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication.

<sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04.

<sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup>For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DNM/

Substitute for Form 1449A/PTO (Modified) (use as many sheets as necessary)	Attorney Docket No.: 42P15766	Application Number: 10/612,542
Page	First Named Inventor: Yen-Kuang Chen	Examiner: Malzahn, David H.
Confirmation No.	Filing Date: July 1, 2003	Art Unit: 2193

**OTHER ART - NO PATENT LITERATURE DOCUMENTS**

Examiner Initials*	Cite No <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	Transl <sup>6</sup>
		AVARO, Olivier, et al., <i>MPEG-4 Systems Overview and Architecture</i> , woody.imag.fr/MPEG4/syssite/syspub/docs/tutorial/, 28/05/98, pp. 1-71 plus Yahoo site ref.	
		BIERLING, M., <i>Displacement Estimation by Hierarchical Blockmatching</i> , SPIE, Vol. 1001, Visual Communications and Image Processing, May 1998, pp. 942-951.	
		CHAN, Y.L. and W.C. Siu, <i>Adaptive Multiple-Candidate Hierarchical Search for Block Matching Algorithm</i> , IEE Electronics Letters, Vol. 31, No. 19, Sept. 14, 1995, pp. 1637-1639.	
		CHAN, Yui-Lam and Wan-Chi Siu, <i>New Adaptive Pixel Decimation for Block Motion Vector Estimation</i> , IEEE Transactions on Circuits and Systems on Video Technology, Vol. 6, No. 1, Feb. 1996, pp. 113-118.	
		CHEN, Liang-Gee, Wai-Ting Chen, Yeu-Shen Jehng Tzi-Dar Chuieh, <i>An Efficient Parallel Motion Estimation Algorithm for Digital Image Processing</i> , IEEE Transactions on Circuits and Systems on Video Technology, Vol. 1, No. 4, Dec. 1991, pp. 378-384.	
		CHENG, K.W., S.C. Chan, <i>Fast Block Matching Algorithms for Motion Estimation</i> , ICASSP96, 1996, pp. 2318ff.	
		CORBAL, Jesus, et al., <i>DLP+TLP Processors for the Next Generation of Media Workloads</i> , 0-7695-1019-1/01, IEEE, 2001, pp. 219-228.	
		DAY, Neil, Ed., <i>Introduction to MPEG-7 (v.3.0)</i> , International Organization for Standardization, ISO/IEC JTC1/SC29/WG11, Coding of Moving Pictures and Audio, #N4032, March 2001, pp. 1-10.	
		DUFAUX, Frederic, et al., <i>Efficient, Robust, and Fast Global Motion Estimation for Video Coding</i> , 1057-7149/00, IEEE, 2000, pp. 497-501.	
		ECKART, Stefan, Chad Fogg, <i>ISO/IEC MPEG-2 Software Video Codec</i> , SPIE Vol. 2419, Digital Video Compression: Algorithms and Technologies, 1995, San Jose, CA, 15 pages.	
		EDIRISINGHE, E.A., et al., <i>Shape Adaptive Padding for MPEG-4</i> , 0098 3063/00, IEEE, 2000, pp. 514-520.	
		FENG, J., Lo, K.T. Mehrpour, H. Karbowiak, A.E., <i>Adaptive Block-Matching Motion Estimation Algorithm for Video Coding</i> , IEE Electronics Letters, Vol. 31, No. 18, 1995, pp. 1542-1543.	
		FURHT, Botho, Joshua Greenberg, Raymond Westwater, <i>Motion Estimation Algorithm for Video Compression</i> , Kluwer Academic Publishers, Boston, 1997, pp. cover-vi, 11, 49-95.	
Examiner Signature		Date Considered	

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Unique citation designation number. <sup>2</sup>See attached Kinds of U.S. Patent Documents. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard S.3). <sup>4</sup>For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DNM/

Substitute for Form 1449A/PTO (Modified) (use as many sheets as necessary)		Attorney Docket No.: 42P15766	Application Number: 10/612,542
Page	First Named Inventor: Yen-Kuang Chen	Examiner: Malzahn, David H.	
Confirmation No.	Filing Date: July 1, 2003	Art Unit: 2193	
<b>OTHER ART - NO PATENT LITERATURE DOCUMENTS</b>			
Examiner Initials*	Cite No <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	Translation <sup>6</sup>
		GHANBARI, M., <i>The Cross-Search Algorithm for Motion Estimation</i> , IEEE Transactions on Communications, Vol. 38, No. 7, Jul. 1990, pp. 950-953.	
		HE, Zhongli, M.L. Liou, <i>A High Performance Fast Search Algorithm for Block Matching Motion Estimation</i> , IEEE Transactions on Circuits and Systems on Video Technology, Vol. 7, No. 5, Oct. 1997, pp. 826-828.	
		HE, Zhong-Li, M.L. Liou, <i>Design of Fast Motion Estimation Algorithm based on Hardware Consideration</i> , IEEE Transactions on Circuits and Systems on Video Technology, Vol. 7, No. 5, Oct. 1997, pp. 819-823.	
		HEISING, G., et al., <i>MoMuSys: MPEG-4 Version 2 Video Reference Software Package</i> , AC098/HHI/WP5.1/DS/P/049/B1, 1998, Abstract and pp. 1-8.	
		INTEL CORPORATION, <i>Block-Matching in Motion Estimation Algorithms Using Streaming SIMD Extensions 2 (SSE2)</i> , Vers. 2.0 9/22/00, Order No. 248605-001, pp. 1-13, A-1, A-2.	
		INTERNATIONAL ORGANISATION FOR STANDARDISATION, <i>Optimization Model, Version 2.0</i> , ISO/IEC JTC1/SC29/WG11, Coding of Moving Pictures and Audio, #N3675, October 2000, 12 pp.	
		INTERNATIONAL ORGANISATION FOR STANDARDISATION, <i>New MPEG-4 Profiles Under Consideration</i> , ISO/IEC JTC1/SC29/WG11, Coding of Moving Pictures and Audio, #N3932, January 2001, pp. 1-35.	
		JAIN, J., A. Jain, <i>Displacement Measurement and its Application in Interframe Image Coding</i> , IEEE Transactions on Communications, Vol. 29, No. 12, Dec. 1981, pp. 1799-1808.	
		JU, John C.-H., et al., <i>A Fast Rate-Optimized Motion Estimation Algorithm for Low-Bit-Rate Video Coding</i> , 1051-8215/99, IEEE, 1999, pp. 994-1002.	
		JUNG, Hae Mook, Duch Dong Hwang Coong Soo Park, Han Soo Kim, <i>An Annular Search Algorithm for Efficient Motion Estimation</i> , International Picture Coding Symposium, PCS96, 1996, pp. 171-174.	
		KAPPAGANTULA, S., K.R. Rao, <i>Motion Compensated Interframe Image Prediction</i> , IEEE Transactions on Communications, 33(9), Sept. 1985, pp. 1011-1015.	
Examiner Signature	Date Considered		

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Unique citation designation number. <sup>2</sup>See attached Kinds of U.S. Patent Documents. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard 5.3). <sup>4</sup>For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

**Burden Hour Statement:** This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DNM/

Substitute for Form 1449A/PTO (Modified) (use as many sheets as necessary)		Attorney Docket No.: 42P15766	Application Number: 10/612,542
Page		First Named Inventor: Yen-Kuang Chen	Examiner: Malzahn, David H.
Confirmation No.		Filing Date: July 1, 2003	Art Unit: 2193
<b>OTHER ART - NO PATENT LITERATURE DOCUMENTS</b>			
Examiner Initials*	Cite No <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	Translation <sup>6</sup>
		KIM, Joon-Seek, Rae-Hong Park, <i>A Fast Feature-Based Block Matching Algorithm Using Integral Projections</i> , IEEE Journal on Selected areas in communications, Vol.10, No.5, June 1992, pp. 968-971.	
		KIM, Michelle, Ed., <i>MPEG-4 Systems</i> , International Organization for Standardization, ISO/IEC JTC1/SC29/WG11, Coding of Moving Pictures and Audio, #N3383, June 2000, pp. 1-19.	
		KNEIP, Johannes, et al., <i>Applying and Implementing the MPEG-4 Multimedia Standard</i> , 0272-1732/99, IEEE, 1999, pp. 64-74.	
		KNEIP, J. (Johannes), et al., <i>The MPEG-4 Video Coding Standard—a VLSI Point of View</i> , IEEE Workshop on Signal Processing Systems (SIPS98), 8-10 Oct. 1998, pp. 43-52, A-1, A-2.	
		KOGA, J., et al., <i>Motion Compensated Interframe Coding for Video Conferencing</i> , Proceedings of the National Telecommunications Conference, 1981, pp. G5.3.1- 5.3.3.	
		KOENEN, Rob, Ed., <i>Overview of the MPEG-4 Standard</i> , International Organization for Standardization, ISO/IEC JTC1/SC29/WG11, Coding of Moving Pictures and Audio, #N4030, March 2001, pp. 1-69.	
		KUHN, P., <i>Algorithms, Complexity Analysis and VLSI Architectures for MPEG-4 Motion Estimation</i> , 1999 Kluwer Academic Publishers, Boston, pp. cover-vi, 15, 17-59, 107-109, 119-121, 147-167, and 189-204.	
		KUHN, P., Stechele W., <i>Complexity Analysis of the Emerging MPEG-4 Standard as a Basis for VLSI Implementation</i> , vol. SPIE 3309 Visual Communications and Image Processing, San Jose, Jan.1998, pp. 498-509.	
		LEE, Liang-Wei, Jhing-Fa Wang, Jau- Yien Lee, Jung-Dar Shie, <i>Dynamic Search-Window Adjustment and Interlaced Search Block-Matching Algorithm</i> , IEEE Transactions on circuits and systems for video technology, Vol. 3, No. 1, Feb. 1993, pp. 85-87.	
Examiner Signature			Date Considered

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Unique citation designation number. <sup>2</sup>See attached Kinds of U.S. Patent Documents. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard S.7). <sup>4</sup>For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

**Burden Hour Statement:** This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Substitute for Form 1449A/PTO (Modified) (use as many sheets as necessary)		Attorney Docket No.: 42P15766	Application Number: 10612,542
Page:	First Named Inventor: Yen-Kuang Chien	Examiner: Malzahn, David H.	
Confirmation No.	Filing Date: July 1, 2003...	Art Unit: 2193	
<b>OTHER ART - NO PATENT LITERATURE DOCUMENTS</b>			
Examiner Initials*	Cite No <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume/issue number(s), publisher, city and/or country where published	Translation <sup>6</sup>
		LEE, W., Y. Kim, R.J. Gove, C.J. Read, <i>Media Station 5000: Integrating Video and Audio</i> , IEEE Multimedia, Vol. 1, No. 4, 1994, pp. 50-61.	
		LEE, Xiaobing, Ya-Qin Zhang, <i>A Fast Hierarchical Motion-Compensation Scheme for Video Coding Using Block Feature Matching</i> , IEEE Transactions on Circuits and Systems for Video Technology, Vol. 6, No. 6, Dec. 1996, pp. 627-635.	
		LENGWEHASATIT, Krisda, et al., <i>A Novel Computationally Scalable Algorithm for Motion Estimation</i> , SPIE 3309 VCIP Visual Communications and Image processing, San Jose, CA, Jan. 1998, pp. 66-79.	
		LI, R., B. Zeng, M.L. Liu, <i>A New Three-Step Search Algorithm for Block Motion Estimation</i> , IEEE Transactions on Circuits and Systems on Video Technology, Vol. 4, No. 4, Aug. 1994, pp. 438-442.	
		LI, W., E. Salari, <i>Successive Elimination Algorithm for Motion Estimation</i> , IEEE Trans. Image Processing, Vol. 4, Jan. 1995, pp. 105-107.	
		LIANG, Jie, et al., <i>Region-Based Video Coding with Embedded Zero-Trees</i> , 1068-0314/97, IEEE, 1997, p. 449.	
		LIU, B., A. Zaccarin, <i>New Fast Algorithms for the Estimation of Block Motion Vectors</i> , IEEE Transactions on Circuits and Systems on Video Technology, Vol.3, No.2, April 1993, pp. 148-157.	
		LIU, Lurng-Kuo, Ephraim Feig, <i>A Block-Based Gradient Descent Search Algorithm for Block-Based Motion Estimation in Video Coding</i> , IEEE Transactions on Circuits and Systems on Video Technology, Vol. 6, No. 4, Aug. 1996, pp. 419-422.	
		MO, Hyeon-Cheol, et al., <i>A High-Speed Pattern Decoder in MPEG-4 Padding Block Hardware Accelerator</i> , 0-7803-6685-9/01, IEEE, 2001, pp. II-197 - II-200.	
		MOSCHETTI, F., et al., <i>About Macroblock Subsampling for Motion Estimation on IA-64</i> , Proc. of 2001 IEEE Int'l. Conf. on Multimedia and Expo (ICME 2001), Tokyo, Japan, August 2001, 4 pp.	
		MOSCHETTI, F., et al., <i>A Fast Block Matching for SIMD Processors Using Subsampling</i> , IEEE #0-7803-5482-6/99, pp. IV-321 - IV-324. 2000.	
		NAM, Kwon Moon, Joon-Seek Kim, Rae-Hong Park, Young Serk Shim, <i>A Fast Hierarchical Motion Vector Estimation Algorithm Using Mean Pyramid</i> , IEEE Transactions on Circuits and Systems on Video Technology, Vol. 5, No. 4, Aug. 1995, pp. 344-351.	
Examiner Signature	Date Considered		

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Unique citation designation number. <sup>2</sup>See attached Kinds of U.S. Patent Documents. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard S.3). <sup>4</sup>For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DNM/

Substitute for Form 1449A/PTO (Modified) (use as many sheets as necessary)		Attorney Docket No.: 42P15746	Application Number: 10/612,542
Page	First Named Inventor: Yen-Kuang Chen	Examiner: Matzahn, David H.	
Confirmation No	Filing Date: July 1, 2003	Art Unit: 2193	

**OTHER ART - NO PATENT LITERATURE DOCUMENTS**

Examiner Initials*	Cite No <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	Translation <sup>4</sup>
		NETRAVALI, A., B. Haskell, <i>Digital Pictures Representation and Compression</i> , New York, Plenum, 1988, pp. cover-xv, 334-340, 537-542, and 354-355.	
		PIRSCH, Peter, Nicolas Demassieux, Winfried Gehrke, <i>VLSI Architectures for Video Compression - A Survey</i> , Proceedings of the IEEE, Vol. 83, No. 2, Feb. 1995, pp. 220-246.	
		PO, Lai-Man, Wing-Chung Ma, <i>A Novel Four-Step Search Algorithm for Fast Blockmatching</i> , IEEE Transactions on Circuits and Systems on Video Technology, Vol. 6, No. 3, Jun. 1996, pp. 313-317.	
		PURI, A., H.M. Hang, D.L. Schilling, <i>An Efficient Blockmatching Algorithm for Motion Compensated Coding</i> , Proc. IEEE ICASSP, 1987, pp. 2.4.1-2.4.4.	
		RAGSDALE, Gary L., et al, <i>Relationships of Popular Transmission Characteristics to Perceived Quality for Digital Video Over ATM</i> , National Communications System, Technical Information Bulletin 99-2, January 1999, 64 pp.	
		RAMKISHOR, K., et al., <i>Real Time Implementation of MPEG-4 Video Decoder on ARM7TDMI</i> , Proc. of 2001 Int'l. Symposium on Intelligent Multimedia, Video and Speech Processing, May 2-4, 2001, pp. 522-526.	
		SHI, Y.Q., X. Xia, <i>A Thresholding Multiresolution Block Matching Algorithm</i> , IEEE Transactions on Circuits and Systems on Video Technology, Vol. 7, No. 2, April 1997, pp. 437-440.	
		SIKORA, Thomas, <i>MPEG Digital Video Coding Standards</i> , Preprint from Digital Consumer Electronics Handbook, 1 <sup>st</sup> Ed., McGraw-Hill Book Co., Ch. 9, pp. 1-43.	
		SIKORA, Thomas, <i>MPEG-1 and MPEG-2 Digital Video Coding Standards</i> , Preprint from Digital Consumer Electronics Handbook, 1 <sup>st</sup> Ed., McGraw-Hill Book Co., pp. 1-43.	
		SIKORA, Thomas, <i>The Structure of the MPEG-4 Video Coding Algorithm</i> , Preprint from Digital Consumer Electronics Handbook, 1 <sup>st</sup> Ed., McGraw-Hill Book Co., pp. 1-16.	
Examiner Signature	Date Considered		

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Unique citation designation number. <sup>2</sup>See attached Kinds of U.S. Patent Documents. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard S.3). <sup>4</sup>For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

**Burden Hour Statement:** This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Substitute for Form 1449A/PTO (Modified) (use as many sheets as necessary)		Attorney Docket No.: 42 P15766	Application Number: 10/612,542
Page ...		First Named Inventor: Yen-Kuang Chen	Examiner: Malzahn, David H.
Confirmation No.		Filing Date: July 1, 2003	Art Unit: 2193
<b>OTHER REF- NO PATENT LITERATURE DOCUMENTS</b>			
Examiner Initials*	Cite No <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	Translation <sup>6</sup>
		SONG, Byung Cheol, Jong Beom Ra, <i>A Hierarchical Block Matching Algorithm Using Partial Distortion Criteria</i> , SPIE 3309 VCIP Visual Communications and Image Processing, 1998, San Jose, CA, pp. 88-95.	
		SRINIVASAN, Ram, and K.R. Rao, <i>Predictive Coding Based on Efficient Motion Estimation</i> , IEEE Transactions on Circuits and Systems on Video Technology, Vol. Com-33, No. 8, Aug. 1985, pp. 888-896.	
		STOLBERG, H.-J., et al., <i>The M-Pire MPEG-4 Codec DSP and Its Macroblock Engine</i> , 0-7803-548206/99, IEEE, 2000, pp. II-192-II-195.	
		THAM, Jo Yew, et al., <i>Transactions Letters: A Novel Unrestricted Center-Biased Diamond Search Algorithm for Block Motion Estimation</i> , IEEE, 1051-8215/98, 1998, pp. 369-377.	
		van der SCHAAAR, M., et al., <i>Near-Lossless Complexity-Scalable Embedded Compression Algorithm for Cost Reduction in DTV Receivers</i> , 0098 3063/00, IEEE, 2000, pp. 923-933.	
		WANG, Chung-Neng, et al., <i>Improved MPEG-4 Visual Texture Coding Using Double Transform Coding</i> , 0-7803-6685-9/01, IEEE, 2001, pp. V-227 - V-230.	
		WESTERINK, P. H., et al., <i>Two-Pass MPEG-2 Variable-Bit-Rate Encoding</i> , IBM J. Res. Develop, Vol. 43, No. 4, July 1999, pp. 471-488.	
		WITTENBURG, J.P., et al., <i>HiPAR-DSP: A Parallel VLIW RISC Processor for Real Time Image Processing Applications</i> , 0-7803-4229-1/97, IEEE, 1997, pp. 155-162.	
		XU, Jie-Bin, Lai-man Po, and Chok-Kwan Cheung, <i>A New Prediction Model Search Algorithm for Fast Block Motion Estimation</i> , IEEE Int. Conf. Image Processing, ICIP97, Santa Barbara, 1997, pp. 60-613.	
		YU, Fengqi and Alan N. Willson, Jr., <i>A Flexible Hardware-Oriented Fast Algorithm for Motion Estimation</i> , ICASSP97, 1997, pp. 2681ff.	
		ZHU, Shan, Kai-Kuang Ma, <i>A New Diamond Search Algorithm for Fast Block Matching</i> , IEEE Transactions on Circuits and Systems on Video Technology, Vol. 9, No. 2, Feb. 2000, pp. 287-290.	
Examiner Signature		Date Considered	

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Unique citation designation number. <sup>2</sup>See attached Kinds of U.S. Patent Documents. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard 93). <sup>4</sup>For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard 93.16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.





Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**  
(Not for submission under 37 CFR 1.99)

Application Number	10/612,542
Filing Date	July 1, 2003
First Named Inventor	Yen-Kuang Chen
Art Unit	2193
Examiner Name	Malzahn, David H.
Attorney Docket Number	42P15766

**U.S. PATENTS**[Remove](#)

Examiner Initial*	Cite No	Patent Number	Kind Code <sup>1</sup>	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1	5019968		1991-05-28	Wang, et al.	
	2	5321810		1994-06-14	Case, et al.	
	3	5497497		2008-01-23	Miller, et al.	
	4	6381690		2002-04-30	Lee	
	5	6223277		2001-04-24	Karguth	

If you wish to add additional U.S. Patent citation information please click the Add button.

[Add](#)**U.S. PATENT APPLICATION PUBLICATIONS**[Remove](#)

Examiner Initial*	Cite No	Publication Number	Kind Code <sup>1</sup>	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1	20030084082		2003-05-01	Debes, Eric; et al.	

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

( Not for submission under 37 CFR 1.99)

Application Number	10/612,542
Filing Date	July 1, 2003
First Named Inventor	Yen-Kuang Chen
Art Unit	2193
Examiner Name	Malzahn, David H.
Attorney Docket Number	42P15766

2

20020112147

2002-08-15

Chennupaty, Srinivas; et al.

If you wish to add additional U.S. Published Application citation information please click the Add button

Add

**FOREIGN PATENT DOCUMENTS**

Remove

Examiner Initial*	Cite No	Foreign Document Number <sup>3</sup>	Country Code <sup>2</sup>	Kind Code <sup>4</sup>	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T <sup>5</sup>
	1							<input type="checkbox"/>

If you wish to add additional Foreign Patent Document citation information please click the Add button

Add

**NON-PATENT LITERATURE DOCUMENTS**

Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>5</sup>
	1	PHILIPS ELECTRONICS, "TriMedia TM1000 Preliminary Data Book," 1997, 16 pgs	<input type="checkbox"/>
	2	"MIPS Digital Media Extension," Set Architecture Specification, Web Site - mips.com/MDMXspec.ps, October 21, 1997. 8 pgs	<input type="checkbox"/>
	3	HEWLET PACKARD, "34-bit and Multimedia Extensions in the PA-RISC 2.0 Architecture," Microprocessors Precision Architecture, 1997, 15 pgs	<input type="checkbox"/>
	4	KAWAKAMI, Y., ET AL., "A Single-Chip Digital Signal Processor for Voiceband Applications," IEEE, 1980 International Solid-State Circuits Conference, pp. 40-41, 1980.	<input type="checkbox"/>
	5	SUN MICROSYSTEMS, INC., "UltraSPARC Multimedia Capabilities On-Chip Support for Real-Time Video and Advanced Graphics," SPARC Technology Business, September 1994, 8 pgs	<input type="checkbox"/>

# **INFORMATION DISCLOSURE STATEMENT BY APPLICANT**

( Not for submission under 37 CFR 1.99)

Application Number	10/612,542
Filing Date	July 1, 2003
First Named Inventor	Yen-Kuang Chen
Art Unit	2193
Examiner Name	Malzahn, David H.
Attorney Docket Number	42P15766

6	CASE, B., "Philips Hopes to Displace DSPs with VLIW, TriMedia Processors Aimed at Future Multimedia Embedded Apps," Microprocessor Report, December 1994, pp. 12-18	<input type="checkbox"/>
7	Gwennap, L., "New PA-RISC Processor Decodes MPEG Video, H's PA-7100LC Uses New Instructions to Eliminate Decoder Chip," Microprocessor Report, January, 1994, pp. 16-17	<input type="checkbox"/>
8	TEXAS INSTRUMENTS, "TMS320C2X User's Guide," 1993, pp 3:2-3:11; 3:28-3:34; 4:1-4:22; 4:41; 4:103; 4:119-J;120; 4:122; 4:150-4:151	<input type="checkbox"/>
9	INTEL CORPORATION, "i860 TM Microprocessor Family Programmer's Reference Manual," 1992, Chapters 1, 3, 8 and 11	<input type="checkbox"/>
10	LEE, R. B., "Accelerating Multimedia with Enhanced Microprocessors," IEEE Micro, April 1995, pp. 22-32	<input type="checkbox"/>
11	INTEL CORPORATION, "Pentium Processors User's Manual, vol. 3; Architecture and Programming Manual," 1993, Chapters 1, 3, 4, 6, 8, and 18	<input type="checkbox"/>
12	MARGULIS, N., "i860 Microprocessor Architecture," McGraw Hill, Inc., 1990, Chapters 6, 7, 8, 10, and 11	<input type="checkbox"/>
13	INTEL CORPORATION, "Intel i750, i860 TM, i960 Processors and Related Products, 1993, pp. 1-3	<input type="checkbox"/>
14	MOTOROLA, INC., "Motorola MC88110 Second Generation RISC Microprocessor User's Manual," 1991, 600 pages	<input type="checkbox"/>
15	MOTOROLA, INC., "Errata to MC88110 Second Generation RISC Microprocessor User's Manual," 1992, pp. 1-11	<input type="checkbox"/>
16	MOTOROLA, INC., "MC88110 Programmer's Reference Guide, 1992, pp. 1-4	<input type="checkbox"/>

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(Not for submission under 37 CFR 1.99)

Application Number

10/612,542

Filing Date

July 1, 2003

First Named Inventor

Yen-Kuang Chen

Art Unit

2193

Examiner Name

Malzahn, David H.

Attorney Docket Number

42P15766

17	SHIPNES, J., "Graphics Processing with the 88110 RISC Microprocessor," Motorola, Inc. IEEE, No. 0-8186-26455-0/92, 1992, pp. 169-174	<input type="checkbox"/>
18	ADVANCED MICRO DEVICES, INC., "AMD-3D Technology Manual," February 1998, pp. 1-58	<input type="checkbox"/>
19	HANSEN, C., "Architecture of a Broadband Mediaprocessor," Proceedings of Compcon, IEEE, 1996, pp. 334-340	<input type="checkbox"/>
20	LEVINTHAL, ET AL., "Chap-A SIMD Graphics Processor," Computer Graphics Project, ACM, vol. 18, No. 3, July 1984, pp. 77-81	<input type="checkbox"/>
21	LEVINTHAL, ET AL., "Parallel Computers for Graphics Applications," Proceedings: Second International Conference on Architectural Support for Programming Languages and Operating Systems, (ASPLOS II), IEEE, 1987, pp. 193-198	<input type="checkbox"/>
22	WANG, ET AL., "A Processor Architecture for 3D Graphics Calculations," Computer Motion, Inc., Goleta, CA, 23 pgs	<input type="checkbox"/>

If you wish to add additional non-patent literature document citation information please click the Add button **EXAMINER SIGNATURE**

Examiner Signature

Date Considered

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> See Kind Codes of USPTO Patent Documents at [www.USPTO.GOV](http://www.USPTO.GOV) or MPEP 901.04. <sup>2</sup> Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>3</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>4</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>5</sup> Applicant is to place a check mark here if English language translation is attached.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**  
(Not for submission under 37 CFR 1.99)

Application Number	10/612,542
Filing Date	July 1, 2003
First Named Inventor	Yen-Kuang Chen
Art Unit	293
Examiner Name	Malzahn, David H.
Attorney Docket Number	42P15766

U.S. PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code <sup>1</sup>	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1	3711692		1973-01-16	BATCHER	
	2	3723715		1973-03-27	CHEN et al.	
	3	4139899		1979-02-13	TULPUKE et al.	
	4	4161784		1979-07-17	CUSHING et al.	
	5	4393468		1983-07-12	NEW	
	6	4418383		1983-11-29	DOYLE et al.	
	7	4490788		1984-12-25	NAKATANI	
	8	4498177		1985-02-05	LARSON	

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

( Not for submission under 37 CFR 1.99)

Application Number

10/612,542

Filing Date

July 1, 2003

First Named Inventor

Yen-Kuang Chen

Art Unit

2193

Examiner Name

Malzahn, David H.

Attorney Docket Number

42 P15766

9	4707800	1987-11-17	MONTRONE et al.
10	4771379	1988-09-13	ANDO et al.
11	4903228	1990-02-20	GREGOIRE et al.
12	4989168	1991-01-29	KURODA et al.
13	5081698	1992-01-14	KOHIN
14	5095457	1992-03-10	JEONG
15	5168571	1992-12-01	HOOVER et al.
16	5187679	1993-02-16	VASSILIADIS et al.
17	5268995	1993-12-07	DIEFENDORFF et al.
18	5390135	1995-02-14	LEE et al.
19	5408670	1995-04-18	DAVIES

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**  
( Not for submission under 37 CFR 1.99)

Application Number	10/612,542
Filing Date	July 1, 2003
First Named Inventor	Yen-Kuang Chen
Art Unit	2193
Examiner Name	Malzahn David H.
Attorney Docket Number	42P15766

20	5423010	1995-06-06	MIZUKAMI
21	5426783	1995-06-20	NORRIE et al.
22	5465374	1995-11-07	DINKJIAN et al.
23	5487159	1996-01-23	BYERS et al.
24	5524256	1996-06-04	TURKOWSKI
25	5579253	1996-11-26	LEE et al.
26	5594437	1997-01-14	O'MALLEY
27	5625374	1997-04-29	TURKOWSKI
28	5680161	1997-10-21	LEHMAN et al.
29	5781457	1998-07-14	COHEN et al.
30	5819117	1998-10-06	HANSEN

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**  
( Not for submission under 37 CFR 1.99)

Application Number	10/612,542
Filing Date	July 1, 2003
First Named Inventor	Yen-Kuang Chen
Art Unit	2193
Examiner Name	Malzahn, David H.
Attorney Docket Number	42 P15766

31	5822619	1998-10-13	SIDWELL
32	5838984	1998-11-17	NGUYEN et al.
33	5909572	1999-06-01	THAYER et al.
34	5933650	1999-08-03	van HOOK et al.
35	6041404	2000-03-21	ROUSSEL et al.
36	6115812	2000-09-05	ABDALLAH et al.
37	6192467	2001-02-20	ABDALLAH et al.
38	6288723	2001-09-11	HUFF et al.
39	6484255	2002-11-19	DULONG
40	6548480	2003-04-08	MANDAVILLI et al.

If you wish to add additional U.S. Patent citation information please click the Add button.

**U.S. PATENT APPLICATION PUBLICATIONS**

/David Malzahn/

05/03/2010

EFS Web 2.0

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DNM/